

User Manual Power Induction - Tester

CDN50kA-1P



Title:
Date:
Division Manager:
Quality Manager:
Revised :

Power Induction Tester CDN50kA-1P
04.06.2000
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Coupling-Decoupling Filter with Power Source
CDN50kA-1P Coupling up to 50kA



ATTENTION

This user manual provides information necessary for operation of the test equipment.

Throughout the users manual, standard references are used as an aid to understanding only.

The relevant standard(s) **must** be obtained and used in conjunction with this users manual



Declaration of Conformity

See sheets attached at the end of this user manual:

- **Declaration of conformity to product standards**
- **Declaration of conformity to low voltage directive**
- **Declaration of conformity to EMC directive**

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1 Description

1.1 Operating duty test on SPD in accordance with IEC 61643-1

The CDN50kA-1P is designed to carry out the duty cycle test on SPD

The SPD must be energized at U_c by means of a voltage source having a nominal current capability of at least 5 A. This test is carried out with current impulses in steps up to I_{peak} .

The power frequency voltage remains applied for 30 min after each impulse to prove the thermal stability: the SPD is considered to be thermally stable if the peak of the resistive component of I_c , or the power dissipation steadily decreases during the last 15 min of U_c voltage application.

Current impulses of positive polarity shall be initiated in the corresponding positive peak value of the power frequency voltage source to the energized test sample as follows.

- a) One current impulse at 0,1 (I_{peak} or I_{max}); check thermal stability; cool down to ambient temperature.
- b) One current impulse at 0,25 (I_{peak} or I_{max}); check thermal stability; cool down to ambient temperature.
- c) One current impulse at 0,5 (I_{peak} or I_{max}); check thermal stability; cool down to ambient temperature.
- d) One current impulse at 0,75 (I_{peak} or I_{max}); check thermal stability; cool down to ambient temperature.
- e) One current impulse at 1,0 (I_{peak} or I_{max}); check thermal stability; cool down to ambient temperature.

Pass criteria

The SPD has passed the test if any follow current is self-extinguished and thermal stability is achieved after each impulse of the operating duty test. Both the voltage and current records, together with a visual inspection, shall show no indication of puncture or flashover of the samples. Mechanical damage shall not occur during these tests.

One more impulse at I_n or U_{oc} shall be applied to the SPD while energized at U_c by means of a voltage source having a nominal current capability of at least 5 A. After this impulse, U_c remains applied and thermal stability shall be achieved within 30 min.

Once thermal stability is achieved, either:

- the current, which flows through the test sample, is measured. Its resistive component (measured at the crest of the sine wave) shall not exceed a value of 1 mA;
- or
- the stand-by power consumption shall not increase by more than 20 % of the value measured in 7.7.5.

Following this complete test sequence and after the sample has cooled down to near ambient temperature, the measured limiting voltage test, which was made at the beginning of the test sequence, shall be repeated. The SPD has passed the test, if the values measured before and after the test are below or equal to U_p .

1.2 MIG generator range

With the MIG current generators also other applications are possible like: measurement of earth impedance, impulse impedance of connectors, release of fault current switches, demagnetisation of magnetic metal, etc.

1.2.1 Standard MIG Tester "Insulation, Energy, CWG

	<p style="text-align: center;">Insulation</p> <p style="text-align: center;">Application: voltage withstand tests</p>	<p>Waveform: 1,2/50 μs voltage</p> <p>Range: 0 to 100 kV: 12, 24, 36, 48, 96 kV</p> <p>Standards: IEC 60060-1, -2, IEC 61010</p>
	<p style="text-align: center;">Energy</p> <p style="text-align: center;">Application: protection elements</p>	<p>Waveform: 8/20 μs current</p> <p>Range: 0 to 100 kA: 6, 12, 24, 48kA</p> <p>Standards: IEC 60060-1, -2, IEC 61643-1</p>
	<p style="text-align: center;">Combination</p> <p style="text-align: center;">Application: powered surge tests</p>	<p>Waveforms: 8/20 μs current 1,2/50 μs voltage</p> <p>Range: 0 to 24 kV, 0 to 12 kA</p> <p>Standard: IEC 61000-4-5</p>

Other waveforms on demand.

1.2.2 MIG Clamping Voltage Tester

	<p style="text-align: center;">Clamping Voltage Tester</p> <p style="text-align: center;">Application: Varistors Vclp =<3000V</p>	<p>Waveforms: 8/20 μs current</p> <p>Impedance: 10, 100, 1000 Ohm</p> <p>Range: 0,5 A up to 500 A</p> <p>Standard: IEC 61643-1</p>
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1.2.3 MIG for varistors and gaze arresters tests

	<p style="text-align: center;">Surge Withstand Tester</p> <p style="text-align: center;">Application: SURGE peak current test on Varistors up to Vclp = 3000 V</p>	<p>Waveforms: 8/20 μs current</p> <p>Impedance: 1, 0.5, 0.25 Ohm</p> <p>Range: 100 A up to 100'000A</p> <p>Standard: IEC 61643-1</p>
	<p style="text-align: center;">Energy Tester</p> <p style="text-align: center;">Application: Energy test on Varistors</p>	<p>Waveforms: 10/1000 μs current</p> <p>Range: 0,4 up to 750 A</p> <p>Standard: IEC</p>

	<p align="center">Dual Surge Tester K12</p> <p align="center">Application: SURGE peak current test on Two electrode gas arrester</p>	<p>Waveforms: $i = 8/20, 10/700, 10/350 \mu s$</p> <p>Range: $2 \times i = 6'000, 120, 240 A$ $1 \times i = 10'000, 240, 480 A$</p> <p>Standard: UIT K12</p>
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The „MIG 0603 K12 is a dual output surge current generator for testing protective elements like arresters, or Transzorbe diodes with different waveforms.

The dual output allows testing of three electrode elements .The current ranges are: for 8/20 μs up to 2x6'000 A, for 10/700 μs up to 2x120 A and for 10/350 μs up to 2x240 A.

For two electrode elements the outputs of the generator can be connected in parallel, to increase the current capability up to 240 A for 10/700 μs , 480 A for 10/350 μs and 12 kA for 8/20 μs .

The charging voltage up to 6300 V is sufficient for most of the protection elements, also for elements with relatively high clamping voltages.

The peak output voltage and current of the MIG are indicated on the front display. The two BNC monitor outputs (v,i) allow voltage and current wave shapes to be displayed on an oscilloscope

1.2.4 MIG for X,Y, capacitor tests, CWG

	<p align="center">1,2/50 μs Capacitor Tester</p> <p align="center">Application: Insulation test on X, Y capacitors</p>	<p>Waveforms: 1,2/50 μs voltage</p> <p>Resistor: 3, 5, 7, 9, 13, 25, 27, 45, 62</p> <p>Range: 0 up to 2 μF</p> <p>Standard: IEC 60348-14</p>
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	<p align="center">Flammability Tester</p> <p align="center">Application: flammability test on X, Y capacitors</p>	<p>Range: capacitors up to 4 μF Vmax 6000V capacitor up to 10 μF Vmax 4000V</p> <p>Standard: IEC 60348-14 Amd. 1</p>
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1.2.5 Combination wave tester CWG

	<p align="center">Different Surges</p> <p align="center">Application: Household equipment, Telecommunication equipment</p>	<p>Waveforms: 1,2/50 $\mu s, 8/20 \mu s$ CWG</p> <p>Options: Ring wave 0.5 $\mu s, 100 kHz$ 10/700 μs</p> <p>Range: 0.25 to 6.6 kV</p> <p>Coupling: for single phase included</p> <p>Standards: IEC 61000-4-5, IEC 61000-4-12, UIT K17</p>
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MIG0603-IN

The MIG0603-IN can include up to three different waveforms such as: CWG (1,2/50; 8/20); ITU (CCITT) (10/700, 0,5/700) or 0,5/100kHz ring wave.

The MIG 0603-IN is a surge generator for simulation of indirect lightning on telecom and process and measurement lines. The relevant recommendations are ITU (CCITT) K17 and IEC 61000-4-5.

The MIG 0603-IN is a hybrid generator with a voltage waveshape 1,2/50 μs at "no load" and a current wave-form 8/20 μs at short circuit.

At 2 Ohm source impedance of the MIG 0603-IN, the voltage and current waveform can be guaranteed at the terminal of a 1 m connection cable. Instead of the cable connection a test cabinet can be placed on top of the generator. The test cabinet is so designed that the cover can not be opened during the test. The green and red warning lamps are integrated in the test cabinet.

The peak output voltage and current of the MIG are indicated on the display. The two BNC monitor outputs allow voltage and current wave shapes to be displayed on an oscilloscope

	<p align="center">Surge Between Two Lines</p> <p align="center">Application: equipment, varistors</p>	<p>Waveform: 1,2/50 μs, 8/20 μs CWG Impedance: 2 and 12 Ohm Ranges: current 3'000A or 500 A voltage 0 up to 6'000 V Coupling: between two line included</p> <p>Standards: UL 1449 August 15. 1996</p>
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MIG0606-UL

The MIG0603-UL is a Hybrid or combination generator with a voltage wave shape 1,2/50 μ s and a current wave shape 8/20 μ s. The combination waves are delivered by the MIG0603-UL when applying the specified voltage waveform across an open circuit (oc) and the specified current waveform into a short circuit (sc). The exact waveform delivered is a function of the surge generator and the impedance to which the surge is applied.

The peak output voltage and current of the MIG are indicated on the front display. The two BNC monitor outputs (v,i) allow voltage and current wave shapes to be displayed on an oscilloscope
 A coupling and de-coupling network is included to superimpose the SURGE on a two wire power supply.

Should you have test needs not listed above, contact an EMC PARTNER representative, EMC PARTNER AG in Laufen (CH) or visit our Web Site

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1.3 Technical Data

CDN50kA-1P Tester

With MIG1260	Usable only for MIG1260, or one HV generator of a MIG12100	
Coupling	5 x 10 kA	a.c. current protected
a.c. source manual setting	manual setting, multimeter	
Current in function of ranges	0 up to 230V	5A
	0 up to 800V	5A
	>800V up to 1200V	3A maximum
Public power source	single phase 230V/16A 50/60Hz	
Decoupling to generator	1 x max 1500V, 10kA per path	
Decoupling to power line	1 x 1200 V a.c.	
Power switch	main contactor 230V /16A	

1.3.1 Block diagram

See annexes of this UM

1.4 Mechanical dimensions

1.4.1 CDN50kA-1P Tester

MIG-Type	Dimensions [mm]	Weight [kg]	Versions
	width x depth x height		
CDN50kA-1P	600 x 650 x 1230	177	19"

1.5 Power supply CDN50kA-1P

The ac power 50 / 60 Hz for the variac, insulation transformer and the filter stages

The control with the impulse part of the CDN50kA-1P is connected to the MIG1260CONTROL or MIG12100CONTRO via the multiple pin cable.

Single phase voltage	230 V (50 Hz)	± 10 %
Power consumption	Max. Operation mode < 400 VA standby < 50 VA power off < 5 VA	(230 V, 50 Hz)

The ac power 50 / 60 Hz for the variac, insulation transformer and the filter stages of the CDN50kA-1P

Single phase voltage	230 V (50/60 Hz)	± 10 %
Fuse at customer side	16 A slow	

1.6 Accessories delivered with the CDN50kA-1P Tester

1.6.1 Included articles, dimensions

CDN50kA-1P (Article No. 103487)

Mechanical Dimensions

Unit Height:	18
Length:	67 cm
Width:	60 cm
Height:	123 cm
Net Weight:	230 kg

Included Articles

According to STL-Variante 20, STL-Version 1

Qty	PN	Description
1	104841	Broschure Protective Device Test System
1	104802	Standard calibration report
1	103191	Standard accessories pack
1	103194	CD-UM-IN-ALL includes all User Manuals and Instruction sheets of all EMC PARTNER AG sales products.
1	104816	Power Cord 3 pole (10/13/16A)

1.6.2 Standard accessories

Accessories to CDN50kA-1P (Article No. 103487)

According to OP-Variante 1, OP-Version 1

Qty	PN	Description	Weight (kg)	Length (cm)	Width (cm)	Height (cm)
1	102523	Spare fuse 6.3x32mm T-16A	0	3.2	0.63	0
1	103083	Safety cover for MIG1260 Control, MIG12100 Control or CDN50kA-1P	0	45	18	10
1	103190	Velcro plate	0	30	3	0
1	104877	Control cable 37pin, AMP connectors m/f	0	330	0	0
1	104878	Earth cable 25mm ²	0	300	0	0
10	104883	HV Impulse cable with MC protected right angle plugs black/red	0	66	0	0
10	104884	HV Impulse cable with MC protected right angle plugs black/yellow	0	66	0	0

2 Safety

The CDN50kA-1P belongs to safety class 1

2.1 Safety standards

The CDN50kA-1P fulfils the requirements of the safety standards IEC 61010 „Safety requirements for electrical equipment for measurement, control and laboratory use and the safety standard VDE 0104 (Safety circuits, warning lamps or connector for warning lamps). Based on EN 61010 (IEC 61010) the declaration of conformity to low voltage directive LVD 73/23/EEC (O.J. N° L77, 1973-03-26) is given.

This manual is a integral part of the CDN50kA-1P Tester. The instructions contained in the manual regarding operation and the test set up are to be strictly observed.

2.2 Climatic Conditions

The CDN50kA-1P generators contain high voltage circuits in integrated form. EMC PARTNER only guarantees a correct functioning of the CDN50kA-1P Tester and the associated accessories, if the CDN50kA-1P is operated in the climatic condition specified.

Temperature	15 °C to 35 °C	
Relative humidity	45 % to 75 %	
Atmospheric pressure	86 kPa to 106 kPa	(860 to 1060 mbar)
Not influenced by:	direct solar radiation, rain or condensate water, dust or larger Electro Magnetic Fields as specified in the EMC compatibility chapter.	

Tab. 2.2

The CDN50kA-1P should be operated in a dry, clean room. If for any reason water condenses in the CDN50kA-1P, then no CDN50kA-1P operation should be started before the tester is dry.

It is strictly forbidden to operate the CDN50kA-1P generators in rooms with of gas explosion risk. The high voltage of the CDN50kA-1P can generate sparks, which can ignite the gas.



People with heart pacemakers should not be in the vicinity of the test set up during operation.

2.3 Precautionary measure during use

The CDN50kA-1P generator generates high voltage. The energy content of the SURGE impulse is high and can be dangerous with improper use. It is wise to observe the following rules:

• Never touch the EUT when a test is in operation.
• Touch no connectors of connection cable when a impulse test is in operation.
• The high voltage of the CDN50kA-1P generator and the power on the EUT must turned off before a manipulation on the EUT is carried out.
• For all services, e.g. check of the fuses, the power cord must first be unplugged.

Tab. 2.3

The CDN50kA-1P generator must be connected to power line with a safety ground. If an Insulation transformer is involved in MIG supply the secondary side of the isolating transformer must be grounded.

2.4 Electromagnetic Compatibility

The outputs of the CDN50kA-1P generator and the links between CDN50kA-1P generator and the EUT can emit disturbances. Please consider the national PTT rules.

The Test System CDN50kA-1P should not be operated near sensitive measuring and control systems.

The CDN50kA-1P generator fulfils the following immunity requirements:

• Electrostatic discharge	Level 4 (8 kV)	(IEC 1000-4-2)
• Burst EFT	Level 4 (4 kV)	(IEC 1000-4-4)
• SURGE	Level 3 (2 kV)	(IEC 1000-4-5)

Fig. 2.4



2.5 The manual is an integral part of the equipment. Refer to the manual.

This manual is an integral part of the CDN50kA-1P generator. The safety rules and precautions in the manual must be observed. EMC PARTNER and their representatives are not responsible for damage to persons and equipment by not observance the safety rules and precautions in the manual.

2.6 Sécurité

L'appareil de test MIG1260 est un équipement de la classe de sécurité 1

2.6.1 Normes de sécurité

L'appareil de test répond aux exigences des normes de sécurité CEI 61010 (Règles de sécurité pour appareils électriques de mesurage, de régulation et de laboratoire) et à la norme de sécurité VDE 0104 (Circuits de sécurité, lampes d'avertissement ou connecteurs pour les lampes d'avertissement). Le produit satisfait aux exigences de la directive basse tension LVD 73/23/CEE (JO n° L77, 1973-03-26). L'observation de cette directive a été contrôlée selon DIN EN 61010 (correspond à CEI 61010).



Ce manuel est une partie intégrante de l'appareil de test MIG1260. Les instructions contenues dans le manuel en ce qui concerne le fonctionnement et l'installation d'essai, doivent être strictement respectées.

2.6.2 Conditions climatiques

L'appareil de test contient des circuits haute tension sous forme intégrée. EMC PARTNER ne garantit le bon fonctionnement de l'appareil et des ses accessoires, que s'il est utilisé dans les conditions climatiques spécifiées ci-dessous.

Température	15 ° C à 35 ° C	60 à 90 ° F
Humidité relative	45% à 75%	12,9 à 15,4 psi
Pression atmosphérique	86 kPa à 106 kPa	(860 à 1060 mbar)
Ne pas exposer à:	rayonnement solaire direct, pluie ou eau de condensation, poussière ou un niveau plus important de champ électromagnétique que spécifié dans le chapitre sur la compatibilité électromagnétique.	

L'appareil devrait être utilisé dans un endroit propre et sec. Si pour une raison quelconque de l'eau se condense dans l'appareil, aucun test ne devra être effectué avant que l'appareil soit sec.

Il est strictement interdit de faire fonctionner l'appareil dans des endroits contenant des gaz avec risque d'explosion. La haute tension de l'appareil peut générer des étincelles qui pourraient enflammer le gaz.



Les personnes portant un stimulateur cardiaque ne doivent pas être à proximité de l'installation d'essai en cours d'opération

2.6.3 Mesures de précaution lors de l'utilisation

L'appareil de test MIG1260 est une source de puissance. L'énergie à la sortie de celle-ci est élevée et peut être dangereuse si elle n'est pas utilisée correctement. Il est conseillé d'observer les règles suivantes:

- | |
|--|
| • Ne jamais toucher le EST (équipement sous test) quand un test est en fonctionnement |
| • Ne jamais toucher les connecteurs ou les câbles quand un test CEM est en marche. |
| • Avant toute manipulation de l'EST, s'assurer que l'appareil de test est désactivée et que l'EST est déclenché. |
| • En cas de service, comme vérifier les fusibles, le cordon d'alimentation doit être débranché. |

L'appareil de test MIG1260 doit être connecté à une ligne électrique avec liaison à la terre. Si un transformateur d'isolement est utilisé, le côté secondaire doit être mis à la terre.

2.6.4 Compatibilité électromagnétique

Les sorties de l'appareil de test MIG1260 et les câbles de connexion du système à l'EST peuvent émettre des perturbations. Veuillez s'il vous plaît examiner les règlements nationaux applicables à l'environnement local.

L'appareil de test MIG1260 ne devrait pas être utilisé à proximité de systèmes de mesure et de contrôle sensibles.

L'appareil satisfait aux exigences d'immunité suivantes:

• décharges électrostatique	niveau 4 (8 kV)	(IEC 61000-4-2)
• Burst EFT	niveau 4 (4 kV)	(IEC 61000-4-4 Ed.2)
• SURGE	niveau 3 (2 kV)	(IEC 61000-4-5 Ed.2)

Reportez-vous au manuel



2.6.5 Le manuel fait partie intégrante de l'équipement.

<p>Ce manuel fait partie intégrante du MIG1260. Les règles de sécurité et les précautions à prendre dans le manuel doivent être respectées. EMC PARTNER et ses représentants ne sont pas responsables des dommages causés aux personnes et au matériel découlant du non respect des règles de sécurité et des précautions à prendre citées dans le manuel.</p>
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2.7 Sicherheit

MIG1260 entspricht der Schutzklasse I. MIG1260 darf nur mit einem Versorgungskabel mit enthaltenem Schutzleiter betrieben werden.

2.7.1 Sicherheit Standard

MIG1260 erfüllt alle Anforderungen nach Sicherheit Standard IEC61010 „Safety requirements for electrical equipment for measurement, control and laboratory use. Basierend auf EN 61010 (IEC 61010) ist die Deklaration zur Einhaltung der Niederspannungsrichtlinie LVD 73/23/EEC (O.J. N° L77, 1973-03-26) gegeben.



Dieses Manual ist Bestandteil des MIG1260 Generators. Alle im Manual befindlichen Hinweise und Anweisungen sowie Testkonfigurationen sind strikte einzuhalten.

2.7.2 Klimatische Bedingungen

Die unten aufgeführten klimatischen Bedingungen müssen für einen einwandfreien Betrieb eingehalten werden.

Temperatur	15 °C bis 35 °C	60 bis 90°F
Relative Luftfeuchtigkeit	45 % bis 75 %	12.9 bis 15.4 PSI
Atmosphärischer Druck	86 kPa bis 106 kPa	(860 bis 1060 mbar)
Keine Einwirkung von:	Bei direkter Sonneneinstrahlung, Regen, Staub, starken elektromagnetischen Felder als spezifiziert unter "Elektromagnetische Verträglichkeit"	

MIG1260 darf nur in trockener und sauberer Umgebung betrieben werden. Ist aus irgendwelchen Gründen Kondenswasser im MIG1260 zu erkennen, muss MIG1260 vor Inbetriebnahme vollständig austrocknen.

> MIG1260 darf nicht in explosionsgefährdeten Zonen betrieben werden.
> Personen mit Herzschrittmacher sollten sich während dem Betrieb nicht in unmittelbarer Nähe aufhalten.



2.7.3 Vorsichtsmassnahmen während dem Betrieb

MIG1260 kann Hochspannung an den Anschlüssen führen. Bei unsachgemässer Bedienung entstehen grosse Gefahrenquellen. Folgende Regeln müssen beachtet und eingehalten werden.

Nie während einem Test den Prüfling (EUT) berühren
Nie Steckverbindungen oder Kabel berühren wenn ein EMC Test abläuft.
Vor dem Berühren des Prüflings sicherstellen, dass dieser Spannungslos ist. Entladezeiten interner Speicherladungen beachten.
Für alle Servicearbeiten (Sicherungswechsel) muss das Versorgungskabel (MAINS SUPPLY) aus gesteckt werden.

Der MIG1260 darf nur an ein Speisernetz mit Nulleiter und Schutz Erde angeschlossen werden. Wenn ein Isolationstransformer verwendet wird muss die Sekundärseite mit der Schutz Erde verbunden werden.

2.7.4 Elektromagnetische Verträglichkeit

Der Power Output von MIG1260 und die Anschlusskabel zum Prüfling können Störfelder abstrahlen. Die örtlichen Bestimmungen müssen berücksichtigt werden.

MIG1260 nicht in unmittelbarer Nähe von empfindlichen Messgeräten betrieben. Die Messergebnisse könnten beeinflusst werden.

MIG1260 erfüllt die folgenden Störfestigkeiten:

Elektrostatische Entladung	Level 3 (6kV / 8kV)	(IEC 61000-4-2)
Burst EFT	Level 3 (2kV)	(IEC 61000-4-4)
SURGE	Level 2 (1kV)	(IEC 61000-4-5)

Beachten Sie alle Angaben in der Bedienungsanleitung



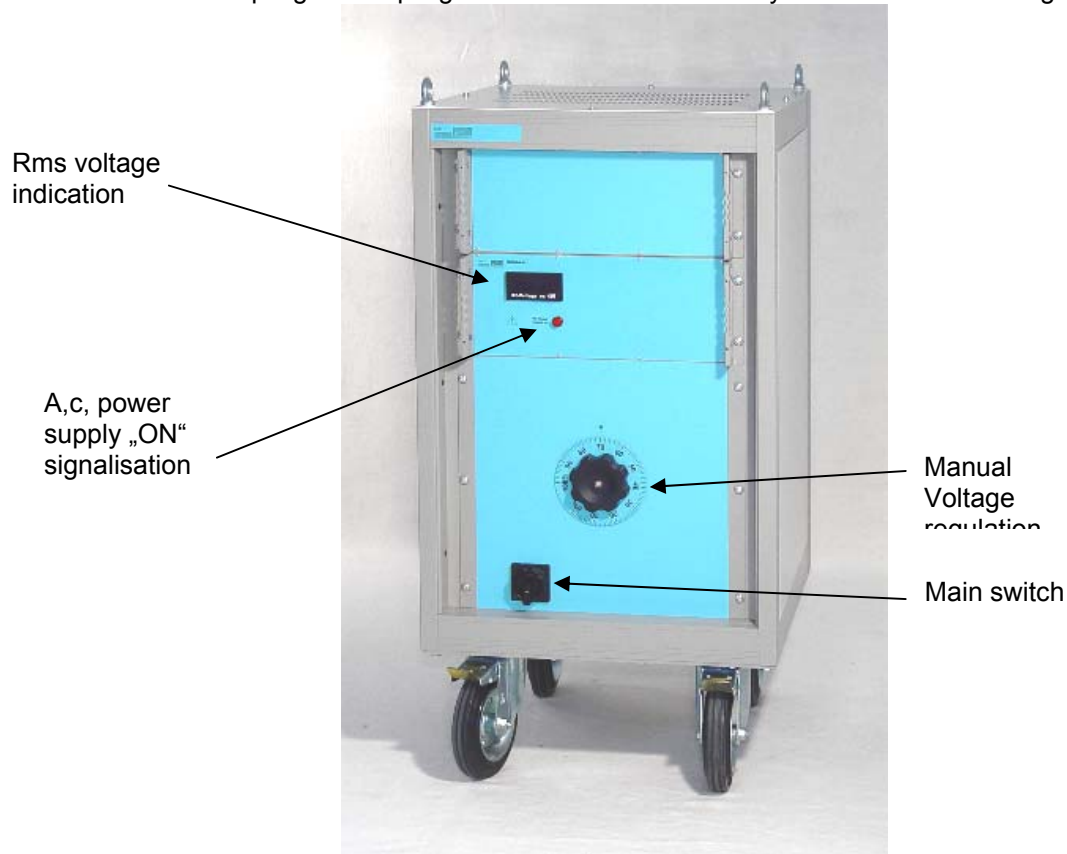
2.7.5 Dieses Manual ist Bestandteil von MIG1260 und dessen Testumgebung.

Die enthaltenen Sicherheitsbestimmungen und Vorsichtsmassnahmen müssen eingehalten werden. Bei deren Nichteinhaltung übernimmt EMC PARTNER und deren Vertreter bei Schaden an Personen oder Messeinrichtungen keine Verantwortung.

3 Mechanical Structure

3.1 General

The CDN50kA-1P coupling de-coupling network is build into a easy movable rack with large weels.



3.2 Measuring Circuit

The CDN50kA-1P generator is equipped with a voltage measurement circuit. The power line voltage is measured with a voltage dividers between phase and neutral.

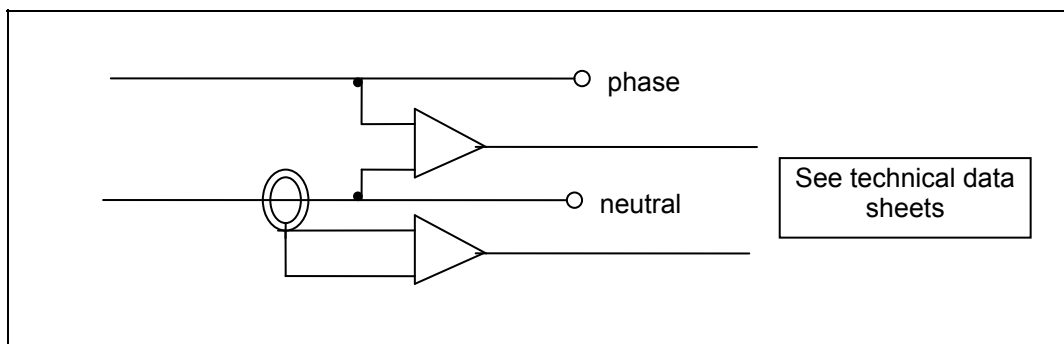
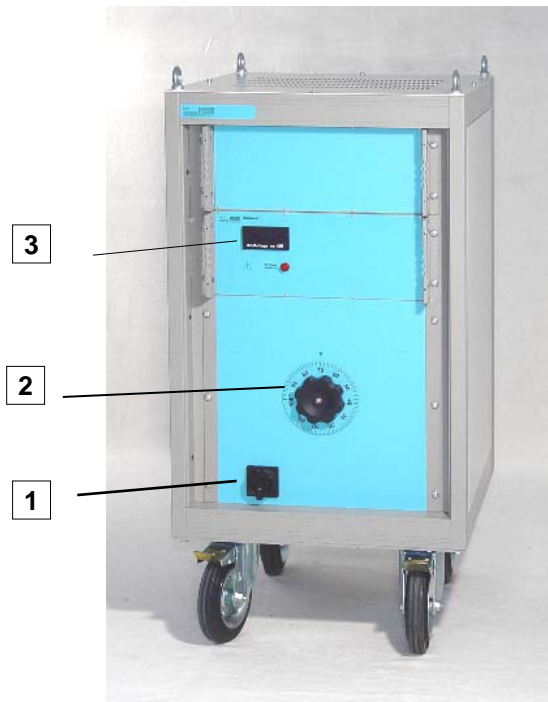


Fig. 3.2-1

3.3 Block diagram of the CDN50kA-1P

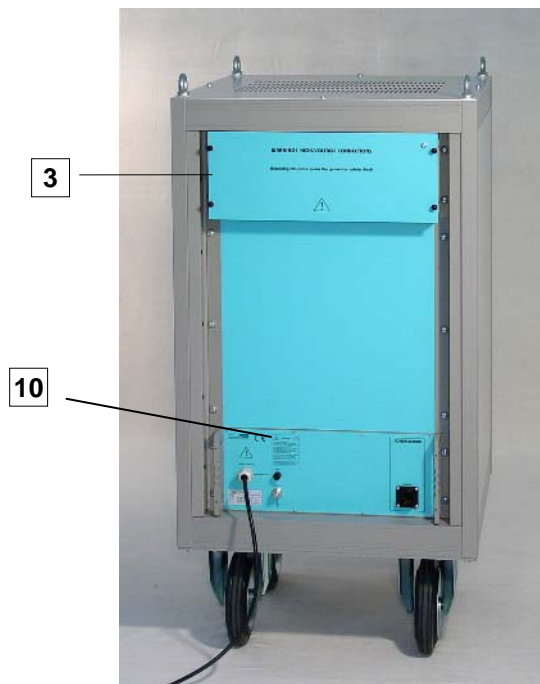
A4 block diagram see at the end of the manual

4 Front and rear panels



The most important elements of the front panel are:

- 1) Main switch with 16 A fuse
- 2) Voltage setting by variac
- 3) Voltage meter



- 10 Control panel
- 11 With safety plate covered HV connection

4.1 Control panel of the CDN50kA-1P

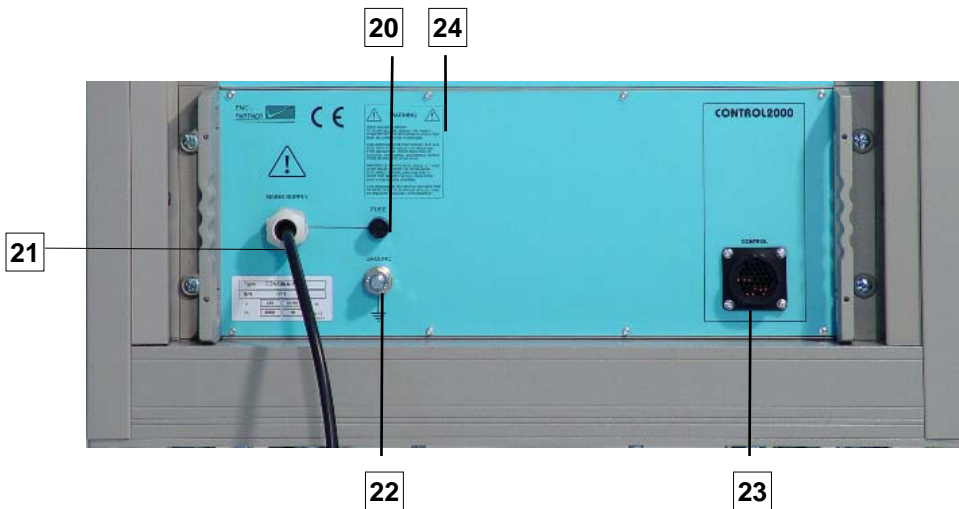


Fig.4.1

4.1.1 Fuse 16 A super slow (20)

The main switch for the ac power 50 / 60 Hz for the variac, insulation transformer and the filter stages

4.1.2 Cable for connecting the CDN50kA-1P to the public power supply. (21)

Fuse needed at the public power supply 32 A 230 V

4.1.3 Protective earth terminal (22)

The protective earth terminal must be connected to the HV generator earth terminal and finally to the public power supply protective earth terminal.

4.1.4 Multi pin control socket (23)

Multi pin socket to connect the CDN50kA-1P to the MIG1260 or MIG12100 control rack. The multi pin cable includes the low voltage power supply voltage for the volt meter, the synchronisation signal and the control of the main conductor.

4.1.5 Warnings (24)

High leakage currents. To avoid electric shock the power cord protective grounding conductor must be connected to ground.

For continued fire protection, replace fuse only with fuse of the specified type and rating. Refer servicing to qualified personnel. Disconnect power cord before replacing fuse.

Dangerous high-voltage inside. If there is any need to open the instrument, disconnect power cord and wait at least one minute for full capacitor discharge before opening.

This instrument may be protected by one or more patents or patent applications. Information available upon request.

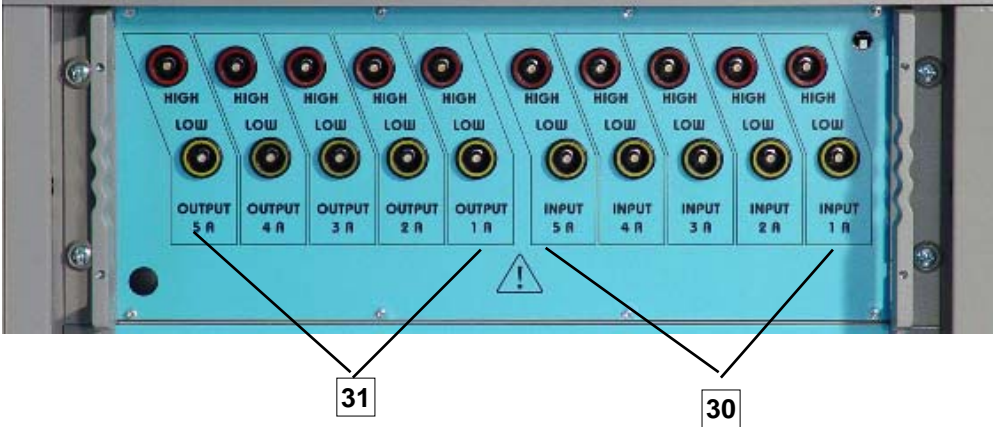


Fig.4.1

4.1.6 High voltage inputs (30)

The 2 x 5 sockets to connect the impulse generator to the CDN50kA-1P

4.1.7 High voltage outputs. (31)

The 2 x 5 outpt sockets to connect the CDN50kA-1P to the MIG1260 or MIG12100 control

5 Preparation for Operation

5.1 Attention, Refer to Manual

This manual is an integral part of the equipment CDN50kA-1P. The safety rules and precautions in the manual must be observed. EMC PARTNER and their representatives accept no responsibility for damages to persons and equipment as a result of non-observation of the safety rules and precautions in this manual.

Before connecting the CDN50kA-1P to a public power line, Chapter 3 Safety must be carefully studied.

5.2 Operators and Service Personnel

Only trained personnel should carry out EMC tests. EMC PARTNER recommends its own seminars. For small groups of maximum 10 persons EMC PARTNER AG offers the following in-house seminars in English or German at the customer's location:

1. EMV Introduction
2. EMV Standardisation
3. EMC „ESD“ immunity test
4. EMC „EFT“ immunity test
5. EMC „SURGE“ immunity test
6. EMC „DIPS“ immunity test
7. EMC „HARMONICS“ immunity test
8. EMC „MAGNETIC FIELD“ immunity test
9. EMC „CW CURRENT INJECTION“ immunity test
10. EMC „CE-MARK“ transient immunity tests
11. „NEMP“ immunity test
12. „AC, DC, IMPULSE“ insulation test
13. Flicker

5.3 Checks before operation

5.3.1 Optical verification of the CDN50kA-1P

Before you unpack the CDN50kA-1P, please check whether the packing is deformed or damaged.

Please keep the shipping box on stock. The box can easily be dismantled and kept stored on a small place. It must be used in case of shipment for verification or repair.

When the CDN50kA-1P is unpacked, also check whether the tester is damaged. If you detect a damage, please inform EMC PARTNER or representative and the shipping organisation immediately.

5.3.2 Power source check

On the rear panel near the cable input, you will find a type plate. Please check whether the tester has been prepared for the correct power line voltage of your public power.

5.3.3 Connecting the CDN50kA-1P to ac power supply

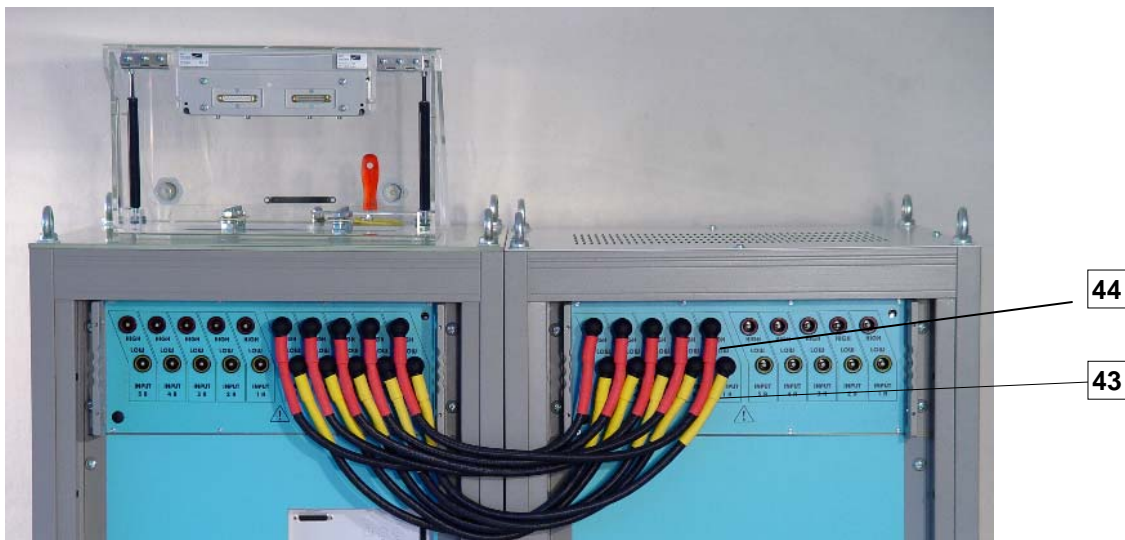
As stated on the type plate, the power supply must have an earth safety wire. Please check the earth connection on your power outlet before you connect and turn on the CDN50kA-1P. For the ac main power the public power supply must be protected by 16 A slow fuse.

5.4 Set-up control cable



- 1) Connect with the yellow green protective earth cable the CDN50kA to the MIG1260 or MIG12100 Control protective earth terminal (41)
- 2) Connect with the multiple pin cable the CDN50kA-1P to the MIG1260 or MIG12100 Control as shown in the picture above. (40)

5.5 Set-up the high voltage cables



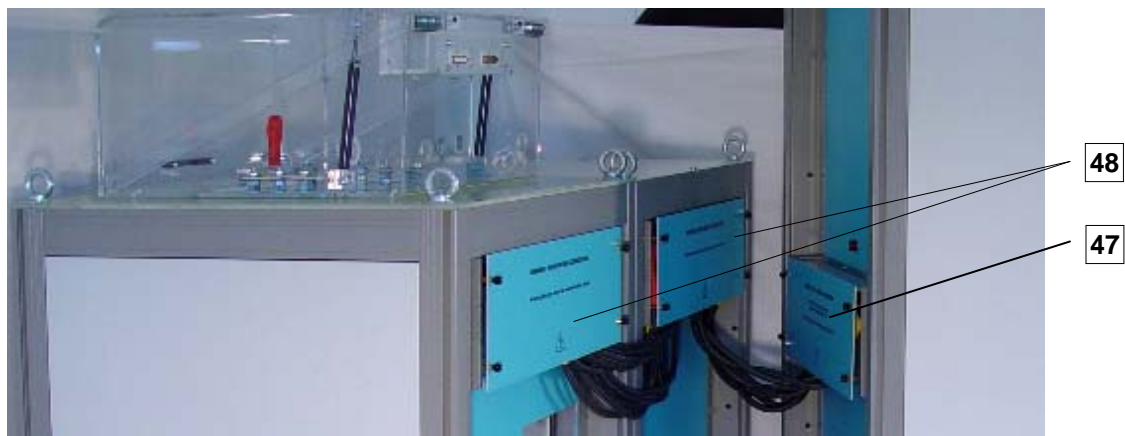
- 3) Connect the yellow labelled cable as shown in the picture above between the CDN50kA and the MIG1260 or MIG12100 control (43)
- 4) Connect the red labelled cable as shown in the picture above between the CDN50kA and the MIG1260 or MIG12100 control. (44)

5.6 Set-up the high voltage cables to the generator



- 5) Connect the yellow labelled cable as shown in the picture above between the CDN50kA and the MIG1260 generator (45)
- 6) Connect the red labelled cable as shown in the picture above between the CDN50kA and the MIG1260 generator. (46)

5.7 Plug in the personal safety protection plate



- 7) Plug-in the personal safety protection plate as shown in the picture above (47)
- 8) Plug-in the personal safety protection plate as shown above onto the CDN50kA-1P and the MIG1260 or MIG12100 Control (48)



Only when the personal safety plates are plugged in the high voltage can be turned on .

6 Testing with the CDN50kA-1P

6.1 General information

When you have studied Chapter 2 „Safety“ and Chapter 5 „Preparation for operation“ and all instructions have been followed you have green light for start tests.



Up to 500 V a.c. voltage the variac can be set prior the a.c. voltage is turned “ON” via the main contactor. Above approximate 500V the main switch must be turned “ON” first and after the a.c. voltage must be set with the variac.

When the a.c. voltage >500V is set before the main conductor is switched “ON” automatically the main conductor will turn “OFF” when action turn “ON” is made.

6.2 Steps for testing e.g. duty cycle test

1. Install the DUT and close the test cabinet
2. Turn on the power main conductor on the MIG1260 or MIG12100Control plate (push button “PRW”)
3. Select the desired a.c. voltage e.g. for duty cycle test the varistor must be supplied with a.c. voltage for 30minutes before the impulse current is released.
4. Select the correct synchronisation angle, the impulse polarity, number of pulses and the current or voltage on the MIG1260 or MIG12100 control
5. After approximate 30 minutes start the charging process of the impulse generator
6. Release the pulse
7. Stop the generator
8. After 30 minutes turn off the main conductor
9. Check the varistor clamping voltage

Further information can be found in IEC 61643-1 “duty cycle test”

7 Maintenance and Servicing

7.1 Maintenance

To avoid electrical shock, be sure that the power cord and the main ac power supply are disconnected before starting maintenance work.

EMC PARTNER recommends that the air filter of the ventilator from time to time be cleaned. The cleaning cycle depends on the environmental conditions. Place the air filter of the ventilator in soapy water for 15 minutes . After 15 minutes, the air filter must be dried before being reinstalled.

No further maintenance is necessary on the CDN50kA-1P.

7.2 Verification of the CDN50kA-1P by the user

7.2.1 AC voltage

1. Measuring point:

DUT output on the MIG1260 or MIG12100 Control

Compare the readings of the display and with your multimeter reading

7.3 Verification of the CDN50kA-1P at EMC PARTNER

EMC PARTNER verify the CDN50kA-1P generators in accordance with standards listed in the “declaration of conformity to standard” attached in the User Manual

See separate test report of CDN50kA-1P.

8 What must be done following failed operation

8.1 Service; Repairs

The CDN50kA-1P is a compact equipment and servicing or repairing the tester can only be carried out by EMC PARTNER authorised service companies.

8.2 Spare parts list

No spare parts are necessary for the MIG.

8.3 Service department of EMC PARTNER AG

EMC PARTNER AG
Baselstrasse 160
CH - 4242 Laufen
Switzerland
Tel. ++41 61 775 20 50
Fax ++41 61 775 20 59
Email service@emc-partner.ch
Web www.emc-partner.com

9 Putting out of operation

Whenever the CDN50kA-1P is not needed remove the power cord.

Reasons for putting the CDN50kA-1P out of operation:

1. Maintenance work
2. Service, repair
3. Verification by EMC PARTNER
4. Shipment for outdoor tests

The CDN50kA-1P is a laboratory test equipment. When the tester is not used, store it in a dry, clean dark place.

10 Packaging and Transport

10.1 Packaging

If you transport the CDN50kA-1P, pack it in the original shipping box and packing material.

10.2 Transport

If you are transporting the CDN50kA-1P to an EMC PARTNER field office for repair, attach a tag to the equipment showing the instrument owner and address, the name of the person to contact about the instrument, the instrument type and the serial number.

Please use the original plastic and box to protect the front and rear of a MIG generator.

11 Recycling / Disposal

11.1 RoHS directive 2002/95/EG

The CDN50kA-1P complies with the directive 2002/95/EG (RoHS - Restriction of certain Hazardous Substances).

From December 2005, all EMC Partner products either hand soldered or by machine are produced using lead-free solder.

11.2 WEEE directive 2002/96/EG

The EMC Partner CDN50kA-1P, is exempted from the directive 2002/96/EG (WEEE) under category 9.

The product should be recycled through a professional organisation with appropriate experience for the disposal and recycling of electronic products. EMC Partner are also available to help with questions relating to the recycling of this product.

11.3 Information for dismantling



Remove always power cord fist.

There is no special danger involved in dismantling the CDN50kA-1P.

11.4 Parts which can be recycled

The CDN50kA-1P contains parts made from steel, aluminium, PVC, two-component sealing compound. The impulse capacitors are filled with non-poisonous mineral oil. The various parts can be separated and recycled.

11.5 Parts which can not be recycled

All parts in the CDN50kA-1P can be recycled.

12 Accessories

12.1 Accessories to CDN50kA-1P System

No accessories to the CDN50kA-1P necessary.

Verification of a CDN50kA-1P Tester on demand.

13 Serial Remote Port

13.1 General

The CDN50kA-1P is not equipped with a serial port.

14 Appendix and Correction

14.1 Appendix

14.2 Correction

14.2.1 Declaration of conformity to the Basic Standards

see appendix at the end of this documents.

14.2.2 Declaration of conformity to the EMC directive 89/336/EEC

see appendix at the end of this documents.

14.2.3 Declaration of conformity to the Low voltage directive 73/23/EWG; 93/68EWG

see appendix at the end of this documents.




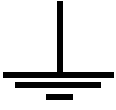
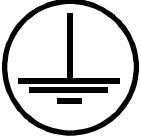
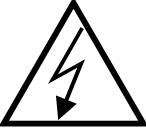



15 Glossary

Wherever possible, definitions in accordance with IEC 50 (IEV 161) are used.

EUT	Equipment under Test
EST	French abbreviation of EUT
EMV = EMC = CEM	Electro Magnetic Compatibility German: Elektromagnetische Verträglichkeit French: compatibilité elctromagnetique
Hybrid pulse	Voltage at no load 1.2 / 50 μ s and current at short circuit 8 / 20 μ s.
CWG	Definition in IEC 1000-4-5 used for Surge Tester Combination wave generator.
Coupling network	Electric circuit for transferring energy with low losses from one circuit into another circuit.
Decoupling network	Electric circuit to prevent transmitting energy from one circuit into another circuit.
CDN coupling decoupling network (single or three phase unit)	Consist of a coupling and a de-coupling network.
EFT	Electric Fast Transient (switched inductance)
ESD	Electric Static Discharge
SURGE	Transients with high energy content with relatively low frequency content as produced by lightning and switching of power lines.
DIP	Short voltage interruption or short voltage drop
IEC	International standardisation organisation for electronic technology
VARIAC	Voltage variable transformer
SPIKE	One pulse of the burst
CRO	oscilloscope
HV	High Voltage
rms.	root mean square; effective value
Insulation test	The voltage waveform is relevant
Energy test	The current waveform is relevant
Combination test	The voltage and current waveform is relevant

Used symbols:

	<p>Direct current</p>
	<p>Alternating current</p>
	<p>Three phase alternating current</p>
	<p>Earth (ground) terminal</p>
	<p>Protective conductor terminal IEC 417, No. 5019</p>
	<p>Caution, risk of electric shock ISO 3864, No. B.3.6</p>
	<p>Caution (refer to accompanying documents) ISO 3864, No. B.3.1</p>

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Declaration of Conformity

EMC PARTNER AG Ettingen Switzerland declares under its sole responsibility that the product:

MIG Test System

is in conformity with the following standards:

CDN50kA-1P

**See also Technical Specification
CDN50kA-1P**

Laufen, 02. February 2004

EMC PARTNER AG



M. Lutz
Managing Director

EMC PARTNER AG



R. Henz
Manager Service Department

Appendix to 14.2.3 Conformity declaration with basic standards



Manufacturer Declaration Of Conformity EMC

Directive 89/336/EEG with table VII 2004/108/EC

The EMC Tester

Type: CDN50kA-1P

has been tested in accordance with the following standards:

harmonised:
EN 61000-6-3: 2007
EN 61326: 2006

international
IEC 61000-6-3
IEC 61326-1

Fulfilling the directions of the EMC - Directive 89/336/EEG and with table VII 2004/108/EC

EMC PARTNER authorised representative established within the EC Community

H+H High Voltage
Technology GmbH
Im kurzen Busch 15
DE - 58640 Iserlohn

Laufen: 04. August 2009

EMC PARTNER AG



M. Lutz
Managing Director

EMC PARTNER AG



R. Henz
Manager Service Department

Appendix to 14.2.2 K Conformity declaration with the EMC directive

Appendix to 14.2.2 K Conformity declaration with the EMC directive



Manufacturer Declaration Of Conformity LV

Directive 73/23/EWG; with table VI 2006/95/EG

The EMC Tester

Type: CDN50kA-1P

is designed and manufactured complying with the following harmonised standards:

Harmonised:
EN 61010-1: 2001

international
IEC 61010-1

in accordance with the regulation of LV - directive of the members states 73/23/EWG and with table VI 2006/95/EG

EMC PARTNER authorised representative established within the EC Community

H+H High Voltage
Technology GmbH
Im kurzen Busch 15
DE - 58640 Iserlohn

Laufen, 05.August 2009

EMC PARTNER AG

M. Lutz
Managing Director

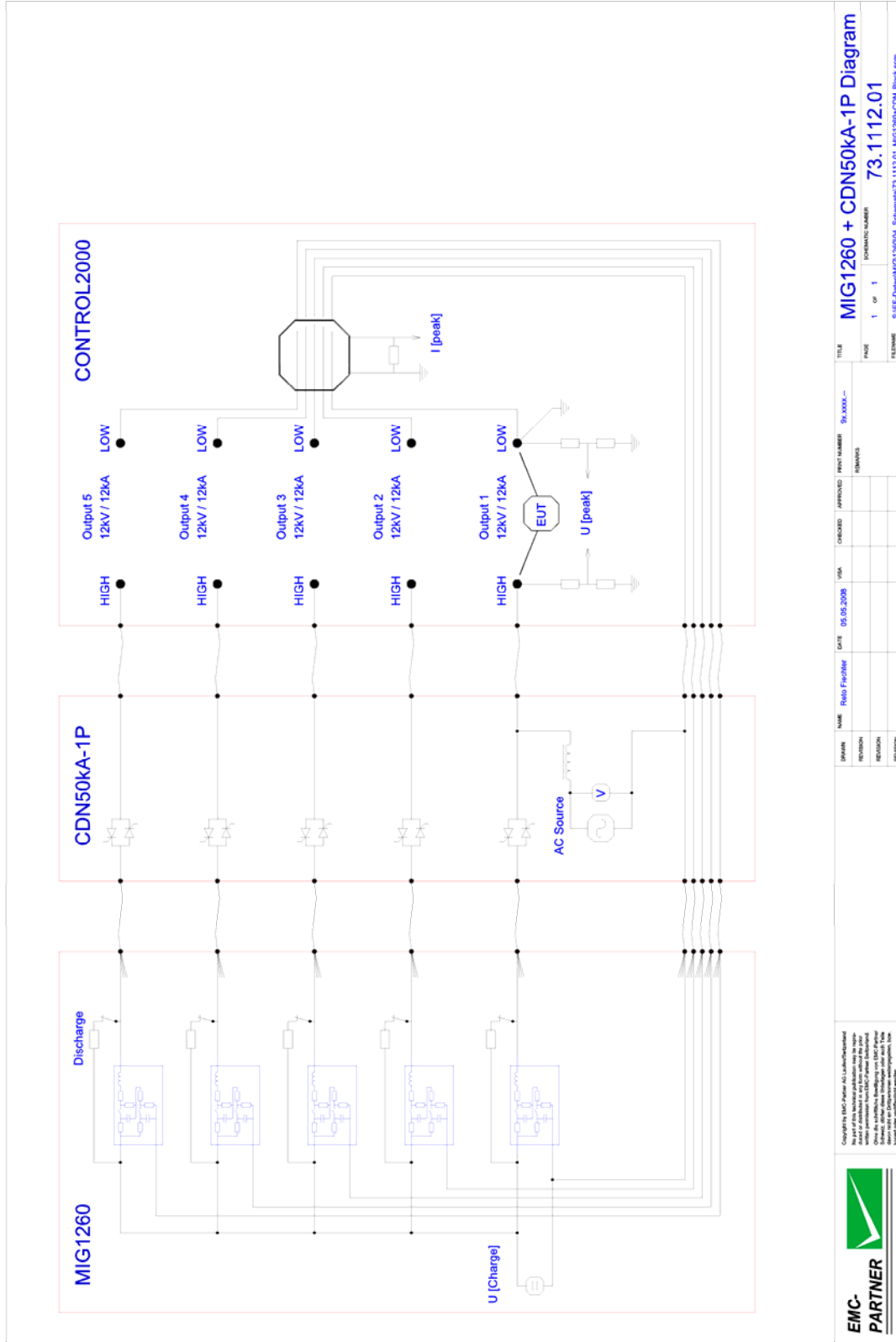
EMC PARTNER AG

R. Henz
Manager Service Department

Appendix to 14.2.2 Conformity declaration with Low Voltage Directive 93/68/EEC and with table VI 2006/95/EG

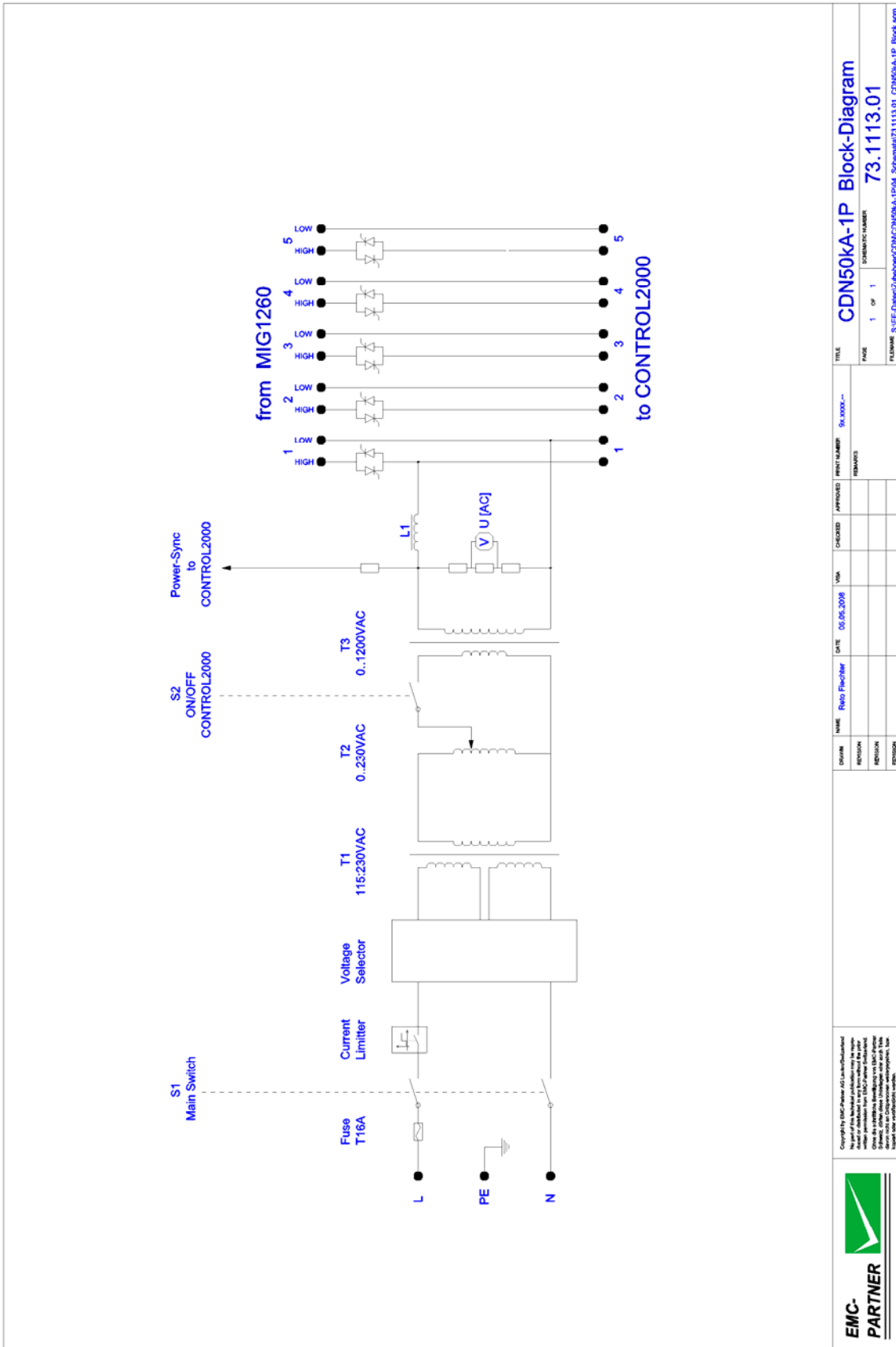
17 Appendix

17.1 Block diagram MIG1260 and CDN50kA-1P



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<p>REVISION: 1</p>	<p>REVISION: 1</p>	<p>PAGE: 1 OF 1 FORMSHEET NUMBER: 73.1112.01</p>
<p>EMC-PARTNER</p>		<p>FILENAME: S:\EE-Other\MIG1260\1260\1260_Schema\73.1112.01_MIG1260+CDN_Block.scm</p>

17.2 Block diagram CDN50kA-1P



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